Products proposed at K&C Science Panel meeting #3

Arid Working Group
Product proposals

WG #2b - Arid products

Philippe Paillou (Arid WG leader)

Products proposed at K&C Science Panel meeting #3

Sub-surface geology of arid and semi-arid regions

Lead scientists

Philippe Paillou,

Product Type

- Subsurface geocoded maps

•Companies prospecting for water and oil.

•Mapping organizations (e.g., for producing new geological maps)

Sensor

- JERS-1 SAR
- PALSAR Dual Pol
- GLI II (optical for context)

Geographical Coverage

- Sahara, Arabia (Eastern Sahara as a prototype)

Input data requirements

- Global Coverage
- One observation only
- ENVISAT ASAR, SRTM

- Single mapping (operational)

The SAHARASAR Project

Philippe PAILLOU
Astronomical Observatory of Bordeaux, France

Ake ROSENQVIST
NASDA - EORC, Japan

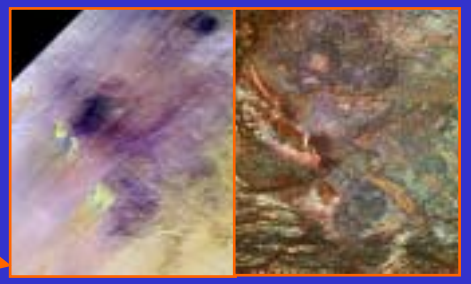
-> **SUB-SURFACE GEOLOGY**
water resources, oil prospection, mining

-> **PALEO-ENVIRONMENTS**
hydrology, tectonics (Quaternary)

-> **MOISTURE MAPPING ?**
dynamics of shallow aquifers

STEP 1: *Eastern Sahara* *(2002-2003)*

JERS-1 SAR archives

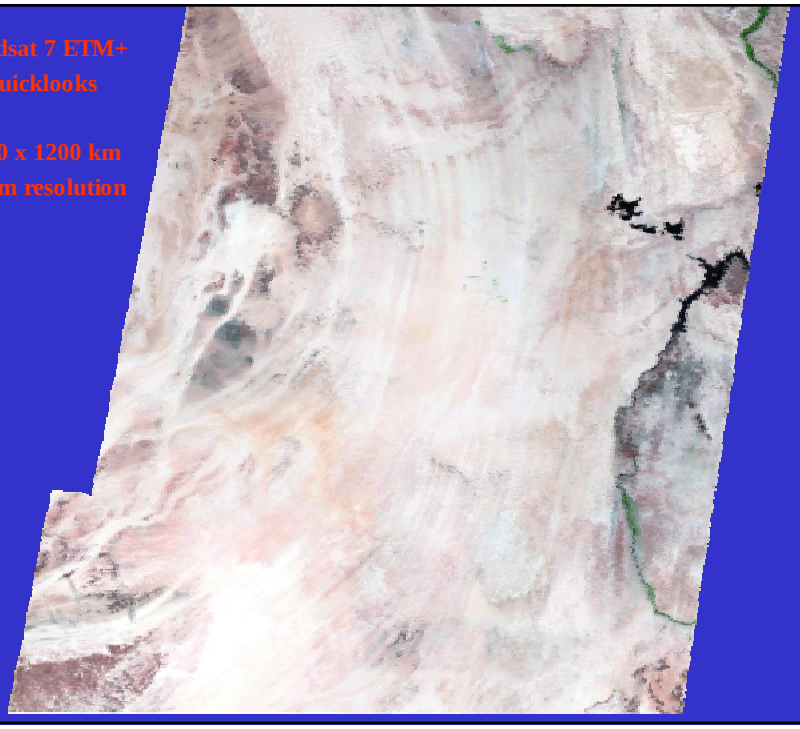


1450 JERS-1/SAR scenes (L-band) > 97 Go

-> Paleo-hydrology of the Nile basin

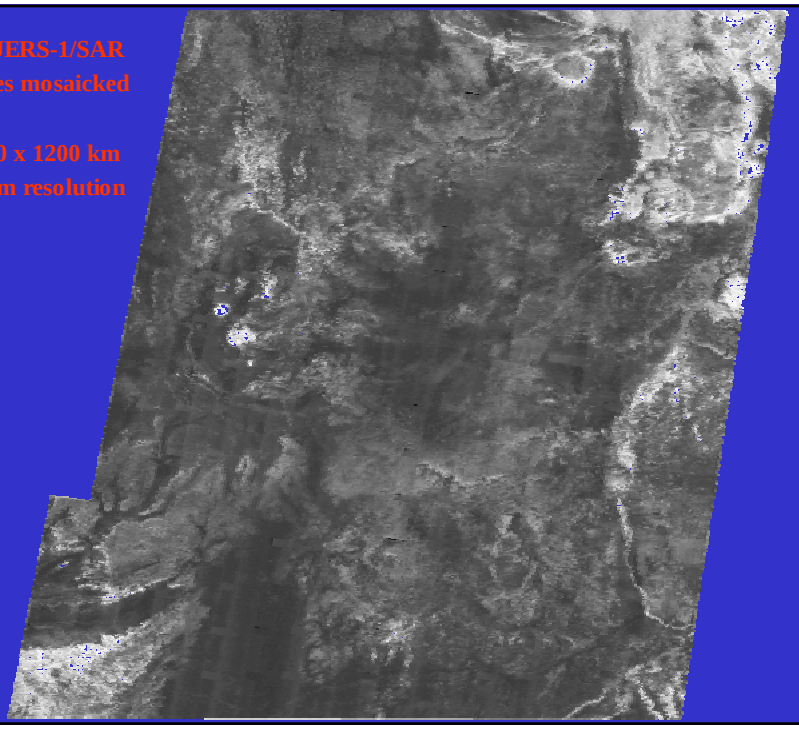
Landsat 7 ETM+ quicklooks

1200 x 1200 km
250 m resolution



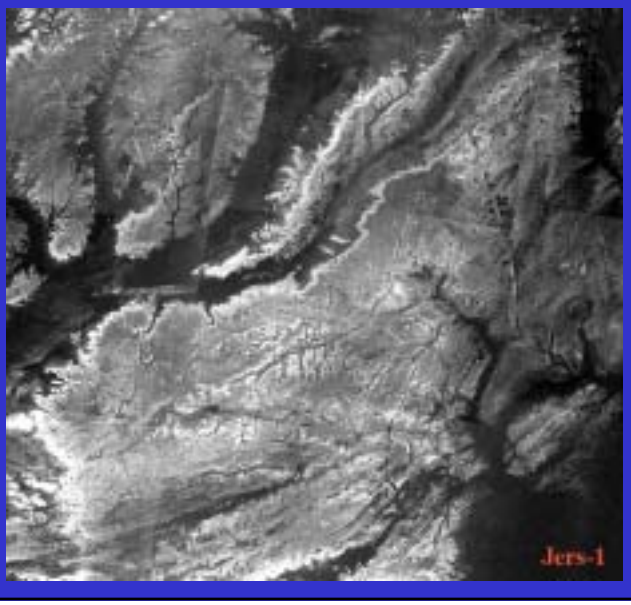
261JERS-1/SAR
scenes mosaicked

1200 x 1200 km
250 m resolution



Paleo-hydrology

(205 x 190 km, 250 m resolution)

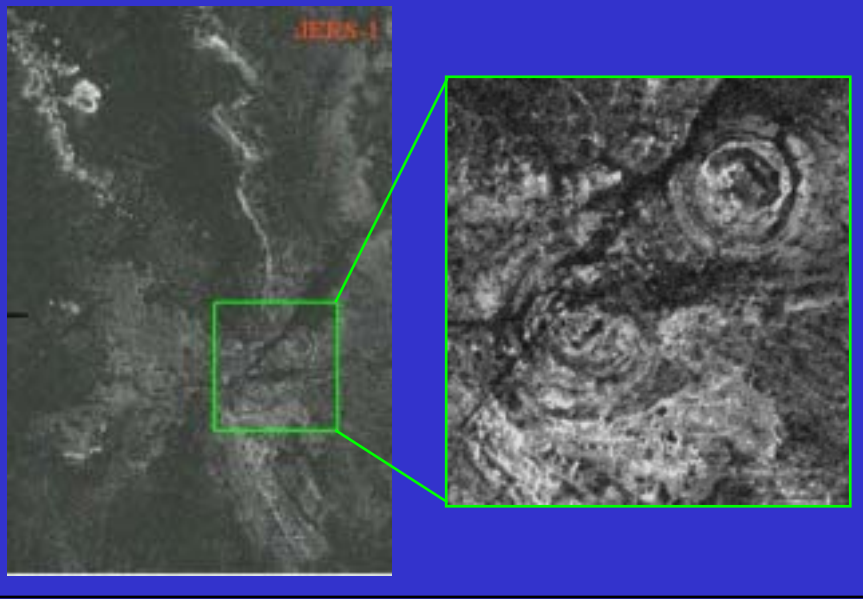


Tectonics

(110 x 105 km, 250 m resolution)

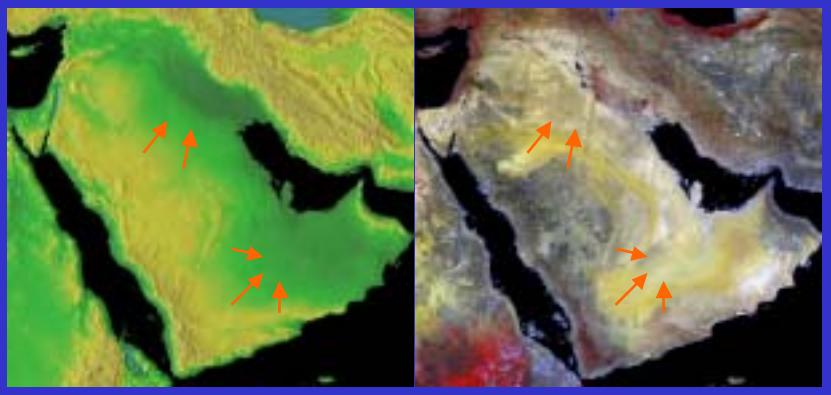
Impact Craters

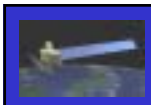
(60 x 90 km, 250 m resolution)



STEP 2: *Arabia* *(2003-2004)*

JERS-1 SAR archives





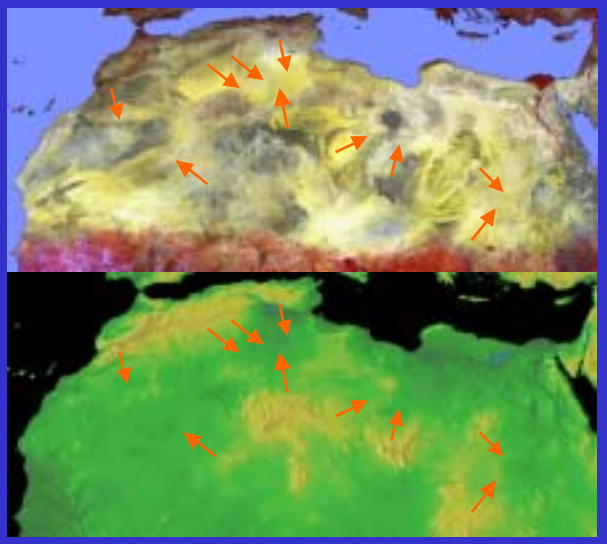
STEP 3: *Sahara* *(2004-2006)*

ALOS/PALSAR dual-pol data

> 6000 PALSAR scenes

+ C-band data from ENVISAT/ASAR (ESA cooperation)

+ visible counterpart ADEOS GLI / Landsat 7 (low resolution 250 m)



Output Products

JERS-1/ALOS SAR mosaics (-> 50 m -> 250 m) = OAB + NASDA

+ visible counterpart (ADEOS, Landsat 7 -> 250 m)

+ SRTM DEM (90 m)

Web-based access to a GIS database (Sahara, Arabia) = OAB

-> Wide access for the international community

-> Tool for defining water prospection strategies

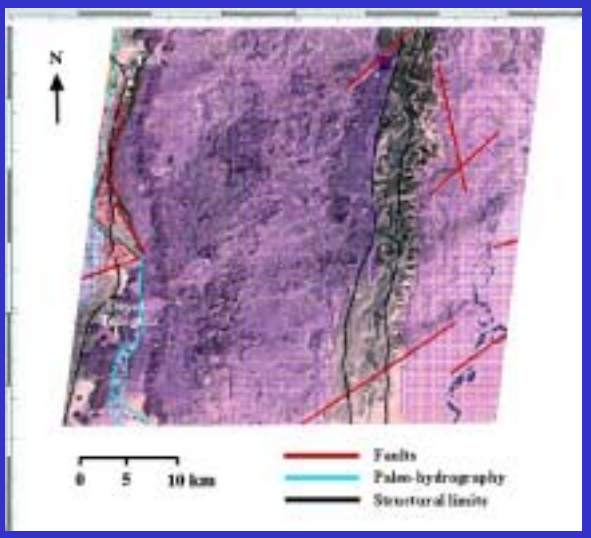
Geo-radar maps with geological interpretation = End User

-> New "start point" for water prospecting

-> New inputs for hydrogeological modeling

Web-based access to a GIS database

Geo-radar maps with geological interpretation



Fundings

-> National

Astronomical Observatory of Bordeaux
French Ministery for Research
NASDA (JERS-1/ALOS data providing)

-> International

European Space Agency (ENVISAT data providing)
United Nations ?
UNESCO (International Hydrology Program) ?